



Forest Plan Monitoring Program

Frequently Asked Questions

What is the forest plan monitoring program?

The plan monitoring program is one of three phases in the forest planning cycle: assessment, plan development or revision, and monitoring. The plan monitoring program is proposed in the forest plan, implemented during the life of the forest plan, and helps identify if changes may be warranted to forest management. The plan monitoring program is guided by a set of monitoring questions and associated indicators.

Monitoring is a systematic process of collecting information to evaluate effects of actions or changes in conditions or relationships. The plan monitoring program found in a forest plan includes only some of the monitoring conducted by a forest or region. For more information on Forest Service monitoring in the context of forest management please see Ecosystem Management and Coordination: <https://www.fs.fed.us/emc/index.shtml>.

Is the forest plan monitoring program a new requirement under the 2012 Planning Rule?

No, monitoring was required by the 1982 Planning Rule, and monitoring was included in forest plans created under that rule. In fact, monitoring productivity of the land is required by the 1976 National Forest Management Act. What is new is that the 2012 Planning Rule includes more specific scientific-based instructions for monitoring, including eight topics that must be addressed by a monitoring program. These topics are described in more detail below.

How do monitoring results inform forest plan revisions?

The forest plan monitoring program helps us determine whether the current forest plan is effective in achieving the desired conditions and objectives laid out in the plan. Every two years after a forest plan is finalized, the forest is required to produce a biennial monitoring evaluation report. During this evaluation, it would determine whether or not a change may be warranted to the plan monitoring program, forest plan, forest assessment, or management activities. Over the life of the forest plan, these evaluations would be compiled and then used to inform the next planning process.

How is the new biennial monitoring evaluation report different from a traditional monitoring report?

Traditional monitoring reports are generally just an accounting of monitoring information (e.g., the number of activities that were completed, the number of a particular species in a specific place). The biennial monitoring evaluation report is a more involved process of evaluating the monitoring information (e.g., status and trend) relative to the desired conditions, objectives, goals, standards, and guidelines contained in the Forest Plan. It is also a critical step in the adaptive management cycle of: plan, act, monitor, and evaluate.

The biennial monitoring evaluation reports are also a tool and a resource for the public to learn more about how the Forest Service is managing forest resources. The biennial monitoring evaluation report is designed to help the public, as well as Federal, State, local government, and Tribes learn more about the overall monitoring program and the progress that is being made by the unit.

What are monitoring questions and associated indicators?

Monitoring questions and associated indicators help focus the plan monitoring program on the most important social, economic, and ecological variables. Monitoring questions can be written to test assumptions from the forest plan, track relevant environmental conditions over time, or measure management effectiveness. Monitoring questions need to be linked to plan components described in a forest plan. However, a monitoring question is not needed for every plan component.

Meaningful monitoring questions are written in a way that will provide a useful answer for the responsible official. Meaningful monitoring questions are specific and clear. Appropriate indicators are selected to complement the associated monitoring question. Associated indicators need to be stated in a way that allows us to observe whether we are making progress towards the desired condition or objective. Indicators are quantitative or qualitative variables that can be measured, observed, or described. When observed periodically, indicators may show trends that are relevant to the monitoring questions.

An example of a monitoring question is: *What is the status and trend of black oak trees in the plan area?*

The associated desired condition might be: *Oak trees, snags, and down logs provide habitat for a variety of wildlife species. Oak snags and live trees with dead limbs, hollow boles, and cavities provide shelter, and resting and nesting habitat. Acorns are plentiful, provide food for wildlife, and are available for traditional cultural uses.*

The associated indicator for this example question would be: *Extent of large trees; Regeneration; Incidents of mortality and disease*

How can monitoring address forest-wide conditions?

Monitoring forms the basis for continuous improvement of the forest plan and provides information for adaptive management within the plan area. The plan monitoring program enables the responsible official to determine where changes may be warranted (e.g., forest plan

components, other plan content, the forest assessment, or management activities.

The plan monitoring program is designed to inform the management of resources in the plan area, including testing relevant assumptions, tracking relevant changes, and measuring management effectiveness. By using appropriate indicators that can be measured, observed, or described over time, management actions can be evaluated to determine if they are moving conditions towards anticipated results. Plan monitoring needs to be achievable within the capability of the national forest while staying focused on answering priority management questions and gathering related core information.

A monitoring guide that describes the protocols for collecting and analyzing monitoring data will be developed for each plan monitoring program. Monitoring guides are optional and not part of a forest plan – this makes them flexible and adaptable to respond to new information and emerging science. The Forest Service will make the monitoring guides for the plan monitoring programs publicly available once they are complete.

Are all desired conditions monitored?

No, it is not feasible to monitor every desired condition or other plan components. However, through the strategic selection of monitoring questions and associated indicators, we can assess progress towards achieving or maintaining a forest plan's desired conditions. The monitoring program contains one or more monitoring questions and associated indicators that address each of the following required topics:

- The status of select watershed conditions.
- The status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems.
- The status of focal species to assess the ecological conditions required under the Code of Federal Regulations, specifically 36 CFR 219.9.
- The status of a select set of the ecological conditions required under 36 CFR 219.9 to contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern.
- The status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives.
- Measurable changes on the plan area related to climate change and other stressors that may affect the plan area.
- Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.
- The effects of each management system to determine that they do not substantially and permanently impair the productivity of the land (16 U.S.C. 1604(g)(3)(C)).

The entire monitoring program must be within the financial and technical capability of the forest, augmented by broader-scale monitoring by the region and other monitoring with partners.

Does monitoring occur separate from the forest plan monitoring programs?

Yes. Project and program monitoring, as well as resource or species monitoring conducted by other agencies and organizations, also occurs and may inform the plan monitoring program. There are also ongoing national monitoring programs such as the Forest Inventory and Analysis program, National Visitor Use Monitoring Program, and Watershed Condition Framework. These data sets are sometimes incorporated into the plan monitoring program.

How much data from other agencies is incorporated into forest monitoring programs?

We incorporate data from other agencies to help improve efficiencies and augment existing data sets. For example, the Forest Service participates in the [California State Waterboard's Surface Water Ambient Monitoring Program \(SWAMP\)](#). This program coordinates all water quality monitoring conducted across the state and provides resource managers, decision makers, and the public with timely, high-quality information to evaluate the condition of all waters throughout California. SWAMP works closely with the California Department of Fish and Wildlife, Southern California Coastal Water Research Project, and California State University experts at Chico, San Jose and San Marcos.

We also use volunteer-driven data from programs such as [eBird](#) and information provided to us by the public and partners. See the *Collaboration* section of the [Sierra Nevada Bioregional Assessment](#) for examples of how public information has been included through the use of *The Living Assessment*, how we are working with state agencies on statewide resource planning efforts, such as the State Wildlife Action Plan, and how we are collaborating with partners through Landscape Conservation Cooperatives.

What is a broader-scale monitoring strategy?

New to the 2012 Planning Rule is the requirement for a broader-scale monitoring strategy (Strategy). The Strategy is not part of the forest plan decision, but complements and supports the unit-level monitoring programs.

The plan monitoring program and the broader-scale monitoring strategy are the two monitoring requirements in the 2012 Planning Rule. Each Region of the US Forest Service will develop a broader-scale monitoring strategy to answer plan monitoring questions common to two or more forests that can best be answered at a geographic scale larger than one plan area.

The Strategy should be coordinated and integrated with each forest plan's plan monitoring program to ensure that monitoring is complimentary and efficient and that information is gathered at a scale appropriate to the monitoring questions. Ultimately, the intent of the Strategy is to realize efficiencies by coordinating similar monitoring across units, integrating agency protocols, and leveraging monitoring information collected by partners.

Unlike the plan monitoring program, there are no specific requirements for the broader-scale monitoring strategy, so each region will complete these based on the needs of the forests in the region. Not every forest unit needs to be included in a broader-scale monitoring strategy. The Forest Service Handbook directives indicate that a strategy may be made up of several *sub-*

strategies depending on how it is developed and the scope and scale it covers.

Where can I find Region 5's broader-scale monitoring strategy?

A draft Strategy was released for public input in July 2018. The draft Strategy and cover letter are available on the R5 Planning website (<https://www.fs.usda.gov/detail/r5/landmanagement/planning/?cid=FSEPRD587108>). This Strategy is envisioned to be a living document that will change over time as monitoring questions and associated indicators are revised, added, or removed as conditions change. It will also potentially be modified with changes to national, regional, or forest-level monitoring programs.

What are focal species?

Focal species are defined by the 2012 Planning Rule as “A small subset of species whose status permits inference to the integrity of the larger system to which it belongs and provides meaningful information regarding the effectiveness of the plan in maintaining or restoring ecological conditions to maintain the diversity of plant and animal communities... commonly selected based on their functional role in ecosystems (36 CFR §219.19). Focal species are not selected to make inferences about other species. Focal species are selected because they are believed to be responsive to ecological conditions in a way that can inform future plan decisions. Forest Service handbook direction (FSH 1909.12 chapter 30 § 32.13c) for focal species further specifies that every plan monitoring program must identify one or more focal species and one or more monitoring questions and associated indicators addressing the status of the focal species. The purpose for monitoring the status of focal species over time is to provide insight into the following:

- Integrity of ecological systems on which focal species depend,
- Effects of management on those ecological conditions,
- Effectiveness of the plan components to provide for ecological integrity and maintain or restore ecological conditions, and
- Progress towards achieving desired conditions and objectives for the plan area. It is not expected that a focal species be selected for every element of ecological conditions.

Focal species represent a part of the monitoring requirements for ecological sustainability and diversity of plant and animal communities. “It is not expected that a focal species be selected for every element of ecological conditions” (77 FR 21233, April 9, 2012). Focal species should be selected to monitor when doing so is feasible and they are the best way to track whether ecological integrity and ecosystem diversity is being maintained or improved.

A few qualities of well-selected focal species include: the species is taxonomically well-known and stable; the species is specialized within a narrow habitat; and the species is a permanent resident. Monitoring questions should relate the species to the ecological condition and reason for its selection, and indicators may include affected attributes of the species, such as presence or occupancy, habitat use, reproductive rate, and population trends.

Focal species, as used by the Forest Service, are not meant to act as surrogates for other species. Focal species monitoring is also not the same as monitoring those species in which we have a particular interest, such as threatened or endangered species, invasive species, or other species for which we deliberately manage the landscape.

What is the difference between focal species and management indicator species?

Under the 2012 Planning Rule, Management Indicator Species (MIS) monitoring has been removed and the similar, but different, monitoring of focal species has been added. When making the shift to focal species, the final rule considered the challenges the Forest Service faced in monitoring MIS under the 1982 rule. MIS monitoring has been the subject of much of the scientific and legal debate around the species provisions of the 1982 rule. The 2012 Planning Rule does not include requirements to designate MIS or monitor their population trends. The concept of MIS as a surrogate for the status of other species is not supported by current science, and population trends are difficult and sometimes impossible to determine within the lifespan of a plan. The concept of focal species, however, is well supported in the scientific literature and community. Focal species are not surrogates for the status of other species. Focal species monitoring provides information regarding the effectiveness of the plan in providing the ecological conditions necessary to maintain the diversity of plant and animal communities and the persistence of native species in the plan area.

Management indicator species were used prior to the 2012 Planning Rule as surrogates for other species. The premise was that the well-being of one species could act as a surrogate for another species or species group. The assumption that focusing land management activities on a single species will sufficiently allow for the persistence of other species has been mostly unproven because of the difficulty of tying the indicator species' sensitivity to environmental change to the actual response of another species.

In order to avoid the mistaken assumptions behind substitute species indicators, the Forest Service's definition of focal species does not connect one species to another species, but instead ties a species to specific attributes of the ecosystem. This approach is simpler to validate because direct cause and effect relationships can be more easily identified. A focal species should represent specific components of the ecosystem on which it relies, so that changes to the condition of the ecosystem component, either positive or negative, will be reflected in the status of the focal species. Changes in the status of a focal species are meant to provide insight into the health and integrity of the habitats within our management influence, and extrapolations should not be made to the status of other species that rely on those habitats.

Are former management indicator species used as focal species in the draft forest plans?

Management indicator species could be chosen as focal species, but not necessarily. The key requirement is that the chosen species should represent specific components of the ecosystem on which it relies, so that changes to the condition of the ecosystem component, either positive or negative, will be reflected in the status of the focal species. Changes in the status of a focal

species are meant to provide insight into the health and integrity of the habitats within our management influence, and extrapolations should not be made to the status of other species that rely on those habitats.

An example of a management indicator species that fits the Forest Service's definition of focal species in the 2012 Planning Rule is the benthic macroinvertebrate communities. Benthic macroinvertebrate communities are identified in the scientific literature as good indicators for stream ecosystem integrity. Benthic macroinvertebrate monitoring is accomplished regionally in collaboration with the [California Surface Water Ambient Monitoring Program](#) (SWAMP) (State Water Resources Control Board).

Are at-risk species also focal species?

It is possible that an at-risk species may qualify as a focal species if that species also happens to be an excellent indicator of other environmental conditions or changes in the ecosystem. However, these species are often rare, narrowly distributed, and difficult to sample and, therefore, problematic for analysis. This is the case for some threatened and endangered fish and amphibians and some birds.

There are focal species I would like the Forest Service to consider – how can I share my input?

The plan monitoring programs in the draft forest plans are not final and public input on these programs will be considered. If you believe you know of species or species assemblages that will aid in the monitoring of resource conditions, please share those with us during the 90-day public comment period. Please describe which desired conditions they are effective indicators for and your rationale along with any scientific literature that supports your conclusions. If these are species that are monitored by another agency or entity, please share that information with us.

When determining good focal species, consider these questions:

- Is the monitoring of the species or assemblage of species more cost-effective than the direct measure of the environmental and habitat attributes of interest?
- Is the species taxonomically well-known and stable?
- Is there a thorough understanding of the biology of the species including habitat requirements and life history traits?
- Are we able to differentiate between the effects of natural and anthropogenic stress on the species?
- Are there known relationships between environmental stressors and population status of the species?
- Is the species specialized within a narrow habitat, demonstrating a relationship to habitat attributes of interest?

- Is the species a permanent resident? Migrants are subject to a variety of sources of mortality and stress in their wintering grounds and during migration.
- Are changes in the species population relevant to ecologically significant change in its habitat?
- Is the species sufficiently sensitive to provide an early warning of natural responses to environmental impacts?
- Are populations readily sampled, allowing for estimates of population status (presence-absence or abundance), and cost-effective to measure? For a species with a low population density, sampling problems are particularly severe and may preclude accurate assessment, despite the species being considered a good indicator for other reasons.
- Is there low sampling variability (consistent and high detectability across time and space) of population status?

Will the Forest Service share the evaluations from the plan monitoring programs and broader-scale monitoring strategy?

Monitoring information will be evaluated every two years, starting no later than two years after the effective date of the forest plan decision. This biennial monitoring evaluation report would include information gathered through the plan monitoring program and relevant information from the Region 5 broader-scale monitoring strategy. A written report of the evaluation will be made available to the public on the forest's website. Some monitoring occurs at intervals other than two years, and the results of that monitoring will be included in the following biennial monitoring evaluation report. Documented results from the broader-scale monitoring strategy will be made publicly available on the Regional Office website at least on a 5- year cycle.

If the monitoring evaluation indicates that changes may be warranted to the plan monitoring program (e.g., a monitoring question, an associated indicator), this will be described in the biennial monitoring evaluation report. Changes can be made through an administrative change with public notice. A substantive change to the monitoring program made outside of the plan revision or amendment process will be made only after notice to the public of the intended change and consideration of public comment. The Responsible Official will decide how to notify the public, which may include posting on a webpage, use of emails, or in the biennial monitoring evaluation report. A change to a monitoring guide is not a change to the plan monitoring program and does not require public notification.

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